Appendix C

NOTES ON THE DEVELOPMENT OF META-SYSTEMIC COGNITION

How analytical/rational cognition tries to model aspects of the world.

Analytical/rational cognition attempts to reduce phenomena to the interaction of a collection of relatively unchanging objects that interact according to known rules.

In more detail, it:

- Analyses phenomena into objects (parts) that interact with each other;
- Treats these objects as if they change little through time (unless their parts change) and have relatively fixed attributes;
- Attempts to find rules or laws that govern the interactions between these objects;
- Assumes the interacting objects comprise a relatively closed and isolated system that is largely unaffected by events outside it (its context); and
- Uses the 'rules of interaction' and the starting positions of the objects to deduce how the system will unfold through time.

Much current 'systems thinking' attempts to understand complex systems and processes by applying analytical/rational thinking to them in this way: it tries to reduce them to a collection of interacting parts; or to represent them by a set of variables that are related in specific ways.

Analytical/rational thinking works well for parts of reality that are mechanistic, or that can be approximated well by mechanistic models.

Why is analytical/rational cognition limited?

Analytical/rational cognition is limited because:

- It fails to adequately model certain aspects of reality that cannot be represented effectively by its reductionist approach to modelling.
- It is quickly overwhelmed by increasing complexity as it tries to keep track of all the sequences of interactions.
- It tends not to see patterns, images, fluid processes, parts of the system that might be significant to outcomes, and how complex systems might unfold as a whole. This is because its reductionist approach to modelling does not adequately represent these classes of phenomena.
- It tends to treat the systems it models as if they are isolated from their environment i.e. it tends to assume they are not influenced or determined by the systems in which they are embedded. In short, it tends to ignore **CONTEXT**.
- It tends to treat the components of the systems it models as fixed objects that are relatively unchanging through time. It therefore ignores the fact that all objects are in fact processes that have a history and that will continue to change in the future i.e. all objects were previously different and are in the process of becoming something else as time unfolds. In short, it tends to ignore **PROCESS**.
- It fails to include in its models the relationships that exist between components of a system due to the fact that the components share a common ground or are part of a subsystem or a process. In short, it tends to ignore **RELATIONSHIP**.
- Because it fails to adequately represent Context, Process and Relationship, it fails to model phenomena fluidly as interdependent systems transforming through time. In short, it tends to ignore reality as **SYSTEMS IN TRANSFORMATION**.

How the limitations of analytical/rational cognition can be overcome using the four quadrants:

Meta-systemic cognition overcomes the limitations of analytical/rational thinking by giving attention to the aspects of complex phenomenon that analytical/rational thinking tends to ignore. It therefore builds mental models of reality that are more comprehensive and do justice to the evolving complexity of much of reality.

Analytical/rational cognition tends to ignore the **context** of systems of objects, the fact that all objects are in fact **processes**, the **relationships** between objects and that all these constitute **transforming systems**. These aspects of reality constitute the four quadrants of meta-systemic cognition. They can be used to scaffold the building of mental models that can more adequately represent complex, transforming systems. In more detail:

Context: seeing that everything that exists is part of an organized, multi-layered whole, usually synchronically [at a particular point in time]. (e.g. understanding a beehive by describing only its structure and its environment).

Process: Seeing everything in the process of undergoing unceasing change. (e.g. understanding the processes that bring the beehive into being and make it vanish).

Relationship: Seeing that everything shares a common ground. (e.g. understanding that without describing the relationships between the bee hive's main components—the queen, the drones, the worker bees—that the hive has not been described or understood fully).

Transforming System Seeing everything as a transformational system, combining aspects of Context, Process, and Relationship. (e.g. understanding that the beehive is a living system transforming through time).

How mind-openers can be used to guide attention to the quadrants so that they can be included.

Mental models constructed by analytical/rational thinkers are limited because they tend to ignore aspects of reality identified by the Four Quadrants. Mind openers are questions that can be used to move a thinker's attention to these aspects of reality that are left out of the models of analytical/rational thinkers. An individual can therefore use mind openers as scaffolding to guide their own meta-systemic thinking.

Context mind openers signal that attention needs to be given to the fact that:

- Everything is embedded in a larger, multilayered environment (wholes within wholes within wholes etc). Everything is influenced and constrained by its context.
- There are no systems that are truly isolated from their environment (i.e. from their context).

Process mind openers signal that:

- Everything is in the process of undergoing unceasing change.
- Nothing is fixed, everything is evolving over time.

Relationship mind openers signal that:

- Many processes share a common ground.
- Individual entities are co-evolving with others as parts of sub-systems, systems and processes.

Transforming System mind openers signal that:

- Everything comprises transformational systems, combining Process, Context and Relationship.